THE METEOROLOGICAL ACTIVITIES OF THE LATE PROF. EDWARD C. PICKERING.

By ROBERT DE C. WARD.

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By the death, on February 3, 1919, of Prof. Edward C. Pickering, for more than 40 years director of the Harvard Observatory, meteorology lost an enthusiastic and generous patron. Prof. Pickering would have been the very first to deny that he was in any sense a meteorologist, but he was, throughout his long term of service as professor of astronomy and as head of one of our oldest and best-known observatories, keenly interested in the progress of meteorology and a liberal supporter of meteorological observation and research, even when that research was not directly connected with the work of his observatory. His contributions to meteorology may be briefly summarized under two heads—first, those which were closely related to the astronomical investigations which he undertook or planned; and, second, those which were outside of the field of his own science but to which he gave financial support because he realized their scientific importance.

Under the former head come the regular meteorological observations which for many years formed an important part of the work of the Harvard Observatory. The results of the early observations, from 1840 to 1888, were compiled (by Prof. Arthur Searle) and brought together in one volume of the Annals of the Observatory (vol. 19, pt. 1, 1889). Other early volumes contained the meteorological observations made at Willows, Cal., during the total solar eclipse of January 1, 1889 (by Winslow Upton and A. Lawrence Rotch, vol. 29, pt. 1), and researches on the zodiacal light and a photographic determination of atmospheric absorption (by Arthur Searle and Willamnia P. Fleming, vol. 19, pt. 2). It was, however, in connection with the use of the Boyden fund that Prof. Pickering planned and directed the most important meteorological work of his observatory. In 1887, the Harvard Observatory received a bequest under the will of Mr. Uriah A. Boyden, the income from which was to aid in the establishment of an observatory" at such an elevation as to be free, so far as practicable, from the impediments to accurate observation which occur in the observatories now existing, owing to atmospheric influences." In order to determine the most favorable place for the establishment of the new observatory, it was necessary to make a study of the meteorological conditions at various places which seemed to promise well. Accordingly, preliminary stations, at which astronomical and meteorological work was carried on, were established, in 1888 and 1889, in Colorado and in California. It was in connection with this study of meteorological conditions in Colorado that Prof. Pickering published, in detail, in volume 22 of the Annals (1889) the observations made by the United States Signal Service on the summit of Pikes Peak from 1874 to 1888 (by A. W. Greely). In 1889 an expedition was sent out, under Prof. Solon I. Bailey, to make a study of the meteorological conditions of various places along the west coast of South America. A temporary station was established on Mount Harvard (6,600 feet), about 20 miles northeast of Lima, and full meteorological records were kept from May, 1889, to September, 1890. Later study of the conditions farther south, including cloudiness observations thrice daily from December 14, 1889, to August 23, 1890, at Pampa Central, in the desert of Atacama, led finally to the selection, in October, 1890, of Arequipa, Peru, as the best location for the southern station of the Harvard Observatory. By correspondence carried on in 1887 and 1888, Prof. Pickering had already been able to establish four meteorological stations in Peru, so that observations at Arequipa began in November, 1888, and have continued from that time to now. In connection with the work at Arequipa, a remarkable series of meteorological stations was developed, which extended from the Pacific, at Mollendo, across the Andes to the valley of the Amazon, and included the famous station on El Misti (19,200 feet), "the highest meteorological station in the world." For various reasons, observations at all these stations except Arequipa were suspended at the end of 1900. The volumes on "Peruvian Meteorology" of the Annals (vol. 39, pts. 1 and 2; vol. 49, pt. 2) contain the results of these observations, compiled and discussed by Prof. Solon I. Bailey.

In order to ascertain whether the climatic conditions in South Africa would be better for astronomical work than those at Arequipa, Prof. Pickering sent an expedition to South Africa early in 1909, under Prof. Bailey, who returned in 1910. Meteorological observations were made at several stations, but while the cloudiness is less than at Arequipa or in Cambridge, other conditions proved to be unfavorable, and the project of establishing an observatory in Cape Colony was abandoned.

Prof. Pickering's pole-star recorder is a meteorological instrument whose more extended use would add greatly to our knowledge of the variations of cloudiness at night, concerning which at present relatively little is known.[1]

The second aspect of Prof. Pickering's activities in connection with meteorology concerns his support of investigations which fell outside of the immediate scope of the work of his observatory. One of the objects of the Harvard Observatory, as defined in its statutes, is "cooperation in meteorological investigations." Prof. Pickering lived up to the letter of that statute by cooperating to the fullest extent in the meteorological work of the Blue Hill Observatory and of the New England Meteorological Society.

Blue Hill Observatory was established in 1885 by the late Prof. A. Lawrence Rotch. From that time to the present a close affiliation has existed between Blue Hill and the Harvard Observatory. By a mutually satisfactory financial arrangement between Prof. Pickering and Prof. Rotch, the long and very valuable series of meteorological observations and investigations carried on at Blue Hill have been regularly published in the Annals of the Harvard Observatory. These volumes constitute a notable group of reports which are of the highest credit to American meteorology, and are known all over the world.

The New England Meteorological Society was formed in 1884. Its object was to establish and maintain meteorological stations and to promote popular interest in the study of meteorology. This society had from its start generous support from the United States Signal Service and later from the Weather Bureau. It occupied for eight years in New England the same position as that taken by the then existing State weather services in other parts of the country. In 1892, the society

[1] See MONTHLY WEATHER REVIEW, March, 1919, 47:154-155.

transferred all its routine work of observation to the Weather Bureau, which then organized a New England weather service, under a director, as in other States, the society, however, maintaining its existence, for the holdings of meetings and the reading of papers, until April, 1896. Beginning with 1888, the work of the New England Meteorological Society was carried on in cooperation with the Harvard Observatory. The observatory published in its Annals a portion of the regular observations taken by the members of the society, as well as the annual summaries, and a considerable series of important investigations carried out by officers and members of the society.[2] By this arrangement the cost of publishing the society's observations and investigations was materially lessened, and the Annals provided a more dignified and more permanent place of publication than could otherwise have been secured. The Harvard Observatory also equipped some of the society's stations.

Even after the transfer of the society's routine observation work to the Weather Bureau, the Harvard Observatory continued for two years to publish the annual report and summary of the New England Weather Service, and also, until the dissolution of the New England Meteorological Society, that organization's investigations were published in the Observatory Annals.

Prof. Pickering's services to meteorology were thus many and valuable, and extended over a long period of years. Few astronomers have contributed as much as he did toward its development. His interest in the progress of all science was keen and enthusiastic, but he had a special interest in meteorology, and never failed to support it when such support could be considered to be within the scope of his own responsibility as director of the Harvard Observatory.

WALTER GOULD DAVIS.[1]

By Prof. ROBERT DEC. WARD.

The meteorological service of the Argentine Republic will be the enduring monument of Walter Gould Davis, whose death on April 30, at his old homestead in Danville, Vt., removed one of the world's best-known and most highly respected meteorologists.

As a young man Mr. Davis went to Argentina to serve as assistant to Dr. Benjamin Apthorp Gould, who founded the Astronomical Observatory at Cordoba, and, in 1872, established the Argentine Meteorological Service. Dr. Gould continued in charge of this service until toward the end of 1884, when he left Argentina, and in 1885 Mr. Davis succeeded him as director, continuing in that position until his retirement in 1915, after 30 years of active work. Under Mr. Davis's able leadership, the Argentine Meteorological Service attained a position in the very front rank of government meteorological organizations. When he resigned his post, to secure well-deserved rest and to seek to regain his health in his own country, the Argentine service extended over an area of nearly 3,000 miles in a north and south line, its southernmost station being in the South Orkney Islands, in latitude 60° 43′ south. Over 2,000 stations were then cooperating in the work of taking meteorological and magnetic observations. The morning and evening observations from nearly 200 stations were being used in the construction of the daily weather map, in addition to the daily rainfall records from about 1,350 rainfall stations.

Mr. Davis was a tremendously keen, active, and progressive director. He was always well abreast of the times, and often was a pioneer in keeping ahead of the times. An illustration of his desire to have the organization under his control contribute in every possible way to the advancement of meteorological knowledge was his acquirement, in 1904, of the meteorological and magnetic station at Laurie Island, in the South Orkneys, which had originally been established by the Scottish Antarctic Expedition. Since 1904, this remote southern station has been operated, without a break in its records, as a part of the Argentine Meteorological Service. The personnel of this lonely outpost is relieved only once each year, when supplies are sent for the coming 12 months. The men are then completely isolated, without (at last accounts) any mail or cable communication, until the relief vessel returns the following year. Under these conditions of extreme loneliness and hardship, the observers at Laurie Island have maintained their observations for 15 years. This is a remarkable record of scientific work of the greatest importance in the study of world meteorology. In his Laurie Island station Mr. Davis always took great pride, and well he might do so.

Fully alive to all the needs of his service, Mr. Davis called to help him in his scientific work the best meteorologists whom he could find. From this country he secured, among others, Prof. F. H. Bigelow, formerly of the Weather Bureau, who has had charge of the magnetic work in Argentina, and Mr. H. H. Clayton, formerly of Blue Hill Observatory, and now chief of the Department of Forecasts in Buenos Aires.

The high quality of Mr. Davis's work was fully appreciated by his meteorological colleagues everywhere. His reputation as a meteorologist and as the successful administrative head of a large and remarkably efficient organization won for him a position on the International Meteorological Committee, the highest international authority on meteorology. This was a well-deserved recognition of the importance of his contributions to meteorology, and of his sound judgment on scientific matters.

The many publications of the Argentine Meteorological Service which were issued under Mr. Davis's direction constitute an inspiring record of splendid work, well planned, thoroughly organized, and ably carried out.

By the death of Walter Gould Davis the world has lost one of its most eminent meteorologists, and those of his colleagues who had the privilege of knowing him have lost a warm-hearted, sympathetic, and helpful friend.

[2] Among these investigations may be mentioned studies of the characteristics of New England climate, types of New England weather, the sea breeze, New England thunderstorms, the Lawrence tornado of 1890, the characteristics of tornadoes, etc.

[1] Reprinted from the Boston Transcript, May 5, 1919.